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NEUROLOGICAL INVOLVEMENT IN *TRICHINELLA SPIRALIS* INFECTION OF MAN.

ANNOTATED BIBLIOGRAPHY NO. 9.10

51 References, *Helminthological Abstracts* 1931-1970.

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274—Nervenarzt. (1931)

a. BECKMANN, K.—" Ueber die neurologischen Symptome bei de Trichinose." IV, 16-20.

407—Zeitschrift für Klinische Medizin. (1931)

a. WEITZ, W.—" Zur Symptomatologie der Trichinose." CXVI, 144-173.

318—Polskie Archiwum Medycyny Wewnetrznej. (1932)

a. FILIŃSKI, W.—[Pathologic changes of central nervous system in trichinosis.] X, 451-457.

254—Journal of Pediatrics.

a. GORDON, M. B., CARES, R. & KAUFMAN, B.—" Encephalitis and myocarditis in fatal case of trichinosis ; report of case in 14-year-old girl." VI (5), 667-675. [1935.]

117—Journal of the American Medical Association.

a. MERRITT, H. H. & ROSENBAUM, M., 1936.—" Involvement of the nervous system in trichiniasis." 106 (19), 1646-1649.

418—American Heart Journal.

a. CUSHING, E. H., 1936.—" Electrocardiographic changes in trichinosis." 11 (4), 494-496.

172—Archives of Neurology and Psychiatry. Chicago.

a. MOST, H. & ABELES, M. M., 1937.—" Trichiniasis involving the nervous system. A clinical and neuropathologic review, with report of two cases." 37 (3), 589-616.

(172a) A useful review is given of previous records of involvement of the nervous system in trichiniasis, followed by a report of two cases with the attendant clinical and pathological features, in which mental and neurologic signs predominated. No trichinae were found in the spinal fluid, but examination of the brain of one case which terminated fatally revealed trichina larvae in the brain substance with characteristic pathological changes of the tissue resembling acute nonsuppurative encephalitis. This fatal case showed two unusual clinical features, massive anasarca and other changes simulating the wet form of beriberi, and the failure of development of eosinophilia.

317—Journal of the Florida Medical Association.

a. HAHN, T. F., 1937.—" Trichinosis : case report—localization in semicircular canals." 23 (11), 571-574.

(317a) Hahn follows a summary of the epidemiology, pathology, symptomatology, diagnosis and treatment of trichinosis with a report of a case in which right lateral nystagmus and vestibular symptoms were an unusual complication. V.D.S.

85—Archives of Internal Medicine.

a. EVERS, L. B., 1939.—" Manifestations of trichiniasis in the central nervous system : report of a case with larvae in the spinal fluid." 63 (5), 949-956.

(85a) Evers describes a case of trichinosis showing toxic encephalitis and neuroretinitis, motile larvae being isolated from the spinal fluid after disappearance of the encephalitic signs. The literature relating to neurologic manifestations of trichinosis is briefly reviewed, and lumbar puncture advised in all suspected cases. V.D.V S.

1021—Archiv für Psychiatrie und Nervenkrankheiten.

*a. VOLLAND, W., 1942.—"Beitrag zur Kenntnis der Gehirnschäden bei Trichinose." 115 (2), 349-361.

131—Journal of the Royal Naval Medical Service.

a. WHITTERIDGE, S. M., 1942.—" A case of *Trichinella spiralis* infection with mental symptoms." 28 (3), 290–293.

(131a) Whitteridge describes a suspected case of *Trichinella spiralis* in a naval petty officer. The symptoms included nausea and headache followed by muscular stiffness and pains. Walking and jaw movements became very difficult. There was considerable mental torpor. Improvement followed rest and treatment, the nervous symptoms disappeared and the mental condition became normal on the 27th day. There was a marked eosinophilia but no larvae of *T. spiralis* could be found in either blood or muscle. P.A.C.

135—Military Surgeon.

a. MARBLE, A., SKOOG, A. P. & BUCHOLZ, D. J., 1942.—" Trichinosis : report of an outbreak at Camp Edwards, Massachusetts." 90, 636–643.

260—American Journal of Clinical Pathology.

*a. GOULD, S. E., 1943.—" Pathology of trichinosis." 13, 627–643.

274—GOULD, S. E., 1945.—" Trichinosis." Springfield, Illinois, xi + 356 pp.

The present day need for accurate information about trichinosis is adequately met by this beautifully illustrated and printed monograph. In its 356 pages the author authoritatively surveys our knowledge of its history, epidemiology, pathology, immunology, symptomatology, diagnosis, treatment, prognosis and prevention, and with the morphology and life-cycle of the parasite in man and animals. There is also an up-to-date bibliography from which omissions are rare. A minatory warning by the publisher limiting reviewers to the quotation of " extremely brief passages " inhibits our desire to give our readers an adequate impression of the excellence of this work. R.T.L.

29—Journal of Bone and Joint Surgery.

a. COHEN, H. H., 1946.—" Trichinosis as a cause of meralgia paraesthetica." 28 (1), 153–156.

(29a) Owing to the peculiar location of the lateral femoral cutaneous nerve in its passage over or under the sartorius muscle it is extremely susceptible to compression. A case is reported in which a fibrous band caused by trichinosis of muscle was responsible for paraesthesia, pains and objective sensory loss over the antero-lateral aspect of the thigh. There was a history of symptoms due probably to trichinosis 5 years previously. At operation the lateral femoral cutaneous nerve was found to be markedly encroached upon by a thick fibrous band in intimate contact with the sartorius muscle in which numerous Trichinella cysts were afterwards detected microscopically. R.T.L.

252—Journal of Experimental Medicine.

a. SYVERTON, J. T., McCOY, O. R. & KOOMEN, Jr., J., 1947.—" The transmission of the virus of lymphocytic choriomeningitis by *Trichinella spiralis*." 85 (6), 759–769.

(252a) *Trichinella spiralis* larvae migrating through the tissues of a guinea-pig concurrently infected with lymphocytic choriomeningitis acquire the virus and can pass it on to another subject. Triturated dead larvae also transmitted the virus, which was actually harboured within the tissues of the worms. P.A.C.

629—Rhode Island Medical Journal.

a. CAMPBELL, W. E., 1947.—" Psychoses with trichinosis. A review of the literature and the report of a case." 30 (12), 870–871.

36—Lancet.

a. MACANDREW, M. & DAVIS, E., 1948.—" Trichiniasis presenting with foot-drop and facial palsy." Year 1948, 1 (6491), 141.

(36a) This is a clinical report of a case of trichinelliasis seen in London in which there was facial palsy and foot-drop with an eosinophile count of 40%, splinter haemorrhages and a clear history of eating undercooked pork, but in which an intradermal test with trichinella antigen was negative. R.T.L.

108—New England Journal of Medicine.

a. SKINNER, J. C., 1948.—" Neurologic complications of trichinosis. Report of two cases." 238 (10), 317–319.

721—Staff Bulletin of the Easton Hospital.

*a. BATTLE, Jr., J. D. & FEINBERG, D. H., 1948.—" Neurologic complications of trichinosis." 1 (2), 7–11.

560—Archiv für Psychiatrie und Nervenkrankheiten.

a. SCHÖPE, M., 1949.—" Encephalitis bei Trichinose mit Nachweis einer Trichinelle im Gehirn." 181 (5/6), 603–610.

(560a) Schöpe reports a fatal case of trichinelliasis in a 32-year-old male with disturbances of the central nervous system. At post-mortem an unencapsulated Trichinella larva was found in the brain. Details are given of the histological findings. A.E.F.

696—New York State Journal of Medicine.

a. BRUNO, M. S. & GOODGOLD, M., 1950.—" Meningoencephalitis due to *Trichinella spiralis*." 50 (6), 707–710.

642—American Journal of Medicine.

a. DAVIS, W. M. & MOST, H., 1951.—" Trichinosis. Case report with observations of the effect of adrenocorticotropic hormone." 11 (5), 639–644.

(642a) A case of acute severe trichinosis showed a fair correlation between the course and severity of the illness and the prognosis with the degree of infection. Clinical improvement coincided with the administration of ACTH. The eosinophilia slowly fell and there was a progressive rise in antibodies. Its use in future cases to assess its possible beneficial role is suggested. R.T.L.

411—Deutsche Zeitschrift für Nervenheilkunde.

a. BETZENDAHL, W., 1951.—" Über die Beteiligung des Nervensystems bei der Trichinose." 166 (1), 31–44.

(411a) Betzendahl presents five case histories of trichinelliasis among German soldiers serving on the eastern front during the 1939–1945 war. In each case there was heavy involvement of the brain and nervous system. A.E.F.

439—Journal of the American Medical Association.

b. TAYLOR, D. R., MOORE, A. M. & SCHWARZ, II, H., 1951.—" Scalenus anticus syndrome caused by trichinosis." 147 (11), 1044–1046.

(439b) A case of trichinosis is reported in which the symptom complex arose indirectly from pressure on peripheral nerves by parasitic myositis due to involvement of the left scalenus anticus muscle. Complete relief of signs and symptoms followed surgical excision of the distal involved portion of the muscle. The protean nature of trichinosis should be remembered in the differential diagnosis of neuromuscular disturbances. R.T.L.

53—American Journal of the Medical Sciences.

a. ROSEN, E., 1952.—" Cortisone treatment of trichinosis." 223 (1), 16–19.

(53a) Outstanding improvement occurred in the clinical condition of a moderately severe case of trichinosis as a result of treatment with cortisone or ACTH. Following intramuscular injections of three doses, each of 100 mg., at eight-hourly intervals followed by two doses at twelve-hourly intervals and then daily for the next two days there was a dramatic fall in the temperature and suppression of the symptoms. Clinical relapse followed withdrawal of the drug but its resumption for 14 days again was remarkably beneficial and the patient thereafter remained asymptomatic. R.T.L.

378—Diseases of the Nervous System.

a. HELFAND, M., HOUCK, K. H. & WEISSMAN, F. M., 1952.—" Trichinosis as a cause of encephalitis. (Case report and review of the literature)." 13 (8), 242–246.

(378a) *Trichinella spiralis* has no predilection for any part of the central nervous system and may give rise to symptoms resembling those of encephalomyelitis, polyneuritis, acute anterior poliomyelitis, meningitis, dermatomyositis, periarteritis nodosa and even psychosis. This is illustrated by the clinical history, neurological examination and pathological report of a case seen in New York. R.T.L.

466—New England Journal of Medicine.

a. SCOTT, R. A., JOHNSON, R. E. & HOLZMAN, D., 1952.—" Trichinosis with neurologic and mental manifestations." 247 (14), 512–514.

(466a) Clinical details are given of three cases of trichinosis with varying degrees of involvement of the central nervous system. All the patients showed electrocardiographic abnormalities. Severe neurological defects may occur with but few of the classical symptoms and signs of trichinosis. R.T.L.

36—Parasitology.

a. SPRENT, J. F. A., 1955.—" On the invasion of the central nervous system by nematodes. I. The incidence and pathological significance of nematodes in the central nervous system." 45 (1/2), 31–40.

(36a) Sprent reviews the available literature dealing with various nematodes which have been observed in the central nervous system in animals and man and discusses their significance. The direct pathological effects are mainly the result of trauma and vary with the route of entry, size and mobility of the parasite. They may be focal or diffuse and may include haemorrhage, degenerative changes, cellular infiltration and glial proliferation. Nervous symptoms associated with the presence of nematodes outside the central nervous system may be allergic in origin. The possibility that nematodes may transport viruses into the central nervous system is discussed. R.T.L.

732—Journal of the Medical Society of New Jersey.

a. SNAPE, W. J., NARDI, M. & BARSE, F., 1956.—" Persistent mental aberration associated with trichinosis. A case report." 53 (6), 309–311.

237—Journal of the American Medical Association.

c. MELTZER, L. E. & BOCKMAN, A. A., 1957.—" Trichinosis involving the central nervous system. Treatment with corticotropin (ACTH) and cortisone." 164 (14), 1566–1569.

(237c) A case of trichinosis with clearly defined focal cerebral damage responded dramatically to daily treatment, for three days, with 300 mg. of cortisone and 80 units of repository corticotropin intramuscular injections reduced to 200 mg. of cortisone and 60 units of corticotropin for three further days. Prednisone was then given in decreasing amounts for 10 days after which the patient was discharged perfectly well. R.T.L.

1671—MAVOR, H., 1958. [Division of Neurology, University of Vermont College of Medicine, Burlington, Vermont.] "Focal central-nervous-system involvement associated with trichinosis. Report of a case." **New England Journal of Medicine, 258** (13), 648–650.

2153—PEARSON, E., BORGOÑO, J. M. & SALCEDO, M., 1960. "Síndrome meníngeo en triquinosis." **Boletín Chileno de Parasitología, 15** (4), 70–72. [English summary p. 70.]
The differential diagnosis of meningitis caused by *Trichinella spiralis* is discussed and details are given of three clinical cases. W. M. Fitzsimmons

829—KILHAM, L. & OLIVIER, L., 1961. "The promoting effect of trichinosis on encephalomyocarditis (EMC) virus infection in rats." **American Journal of Tropical Medicine and Hygiene, 10** (6), 879–884.
Encephalomyocarditis virus caused a high incidence of crippling and death in rats when combined with a *Trichinella* infection. The synergistic effect of the nematode on the virus infection could be demonstrated over a period of ten to 28 days after a *Trichinella* inoculation.

1092—FORRESTER, A. T. T., NELSON, G. S. & SANDER, G., 1961. "The first record of an outbreak of trichinosis in Africa south of the Sahara." **Transactions of the Royal Society of Tropical Medicine and Hygiene, 55** (6), 503–513.
An account is given of the clinical, pathological and parasitological findings in 11 Kikuyu males from Mount Kenya. This appears to be the first record of the occurrence of trichinelliasis south of the Sahara. Statements that indigenous trichinelliasis occurred in out-patients in Tanganyika, Uganda and East Africa, which appeared in the Annual Reports of the Medical Departments of these territories between 1912 and 1948, obviously and erroneously referred to *Trichuris trichiura*. From personal inquiries, veterinarians and helminthologists in other African territories have confirmed the absence of any instances of trichinelliasis in domestic or wild animals south of the Sahara. The single record by Burrows (1910) from Sierra Leone of cysts and white bodies like dried peas was obviously due to misidentification. Treatment with prednisone rapidly relieved the clinical symptoms while diathiazanine and diethylcarbamazine were ineffective. A wild pig killed and eaten during a hunting expedition is presumed to have been the source of infection. R.T.L.

124—DALESSIO, D. J. & WOLFF, H. G., 1961. "*Trichinella spiralis* infection of the central nervous system." **Archives of Neurology. Chicago, 4** (4), 407–417.

Dalessio & Wolff describe a case of trichinelliasis involving the central nervous system in a 45-year-old white American woman accustomed to eating pan-fried pork products. Neurological signs produced by the infection were of unusual severity early in the course of the illness. Corticosteroid therapy begun on the fourth day in hospital (20th day of illness) was followed by a gradual return to consciousness from a deep comatose state but the focal neurological signs were not changed. Treatment was continued for six weeks until the patient was discharged from hospital. At examination six weeks after discharge she was alert and orientated but still triplegic. A table summarizes 55 other cases of trichinelliasis involving the central nervous system and the means of infection, diagnosis, treatment and prognosis are discussed. There are 84 references. J.W.S.

2572—OBODOWSKA-ZYSK, W., 1961. "Powikłania ze strony układu nerwowego w przebiegu włonśicy." **Przeglad Epidemiologiczny. Warsaw, 15** (4), 387–398. [English & Russian summaries pp. 396–397.]

Between 1950 and 1960, 152 cases of trichinelliasis (105 women, 36 men and 11 children) with neurological complications in 54 (fatal in 4) were observed at a Warsaw hospital. In a large proportion of the cases the complications were of a general cerebral disturbance and in half of these there were also other neurological symptoms of a meningeal, cerebral or focal nature, or symptoms affecting the peripheral motor neurons. 4 case histories are given and in 5 cases the neurological symptoms were acute and dangerous to life; these are described. G.I.P.

2188—BUŞILA, V. T., 1962. "On pathogenesis of trichinellosis in man." **International Conference on Trichinellosis (1st)**, Warsaw, September 1960. Proceedings, pp. 205–213. [Discussion pp. 289–290.]

In the Clinic of Infectious Diseases in Rumania 140 cases of trichinelliasis were investigated between 1950 and 1960. Particular emphasis was given to the state of the capillaries as seen in the nails and eyes, the condition of the heart and the blood picture including the blood proteins. It is considered that the main pathology in the disease is of an allergic nature with secondary collagenosis similar to that seen in periarteritis nodosa and serum diseases. G.S.N.

*2566—GRAY, D. F., MORSE, B. S. & PHILLIPS, W. F., 1962. "Trichinosis with neurologic and cardiac involvement: review of the literature and report of three cases." **Annals of Internal Medicine, 57** (2, Pt. 1), 230–244.

2244—EDWARDS, J. L. & HOOD, C. I., 1962. "Studies on the pathogenesis of cardiac and cerebral lesions of experimental trichinosis in rabbits." **American Journal of Pathology, 40** (6), 711–720.

Cardiac and cerebral lesions, similar to those seen in fatal human trichinelliasis, were reproduced in rabbits by infection with various numbers of *Trichinella spiralis* larvae. The time of appearance of the lesions seems to be related to the presence of both circulating larvae and anti-larval antibodies. Rabbits injected parenterally with dead larvae only, produced antibodies but had no lesions. Rabbits irradiated before infection with viable larvae produced little antibody but had the usual lesions. The authors conclude that the lesions are most likely due to toxic products, connected in some way with the circulating larvae, and not to reactions between antigens and anti-larval antibodies occurring within the tissues of the host. R.J.T.

2418—WOODRUFF, A. W., BISSERU, B. & BOWE, J. C., 1966. "Infection with animal helminths as a factor in causing poliomyelitis and epilepsy." *Br. med. J.*, Year 1966, **1** (5503), 1576–1579.

By the use of a skin-sensitivity test, evidence of infection with *Toxocara* has been found in 7 (2·1%) of 329 apparently healthy persons, in 26 (13·6%) of 191 persons who had had poliomyelitis and in 26 (7·5%) of 349 sufferers from epilepsy. Larvae of *Toxocara canis* and *T. cati* migrating from the intestine in children may carry viruses and bacteria to the tissues and thus account for the significantly higher number of poliomyelitis sufferers positive to the skin test. Granulomatous tissue formed around disintegrating larvae in the brain of children may cause epilepsy and the toxocariasis skin test was positive 4 times more frequently in epileptic persons than in healthy controls. 21·3% of 470 dogs examined in the London area were infected with *T. canis* and 21% of 448 cats were infected with *T. cati*. T.Y.

2983—INNES, J. R. M. & SAUNDERS, L. Z., 1962. "Comparative neuropathology." **New York: Academic Press Inc.**, xx+839 pp.

The helminthic infections of the central nervous system, summarized in Chapter XIII, are coenuriasis, cysticerciasis, echinococcosis and cerebro-spinal nematodiasis (including setariasis in goats, sheep and horses in the Far East, kumri in horses in India, Ceylon, Burma and Assam, elaphostrongylosis in sheep in the U.S.A., setariasis and elaphostrongylosis in sheep and deer in the U.S.S.R., ataxia, paralysis and worms in deer all over the world and in moose in Nova Scotia, buffalo in Burma and cattle in India and Japan); angiostrongylosis in dogs and rats in Australia and *Gurltia paralysans* in domestic cats in Chile, strongyle larvae in horses and ascarid larvae in children are also included. The migratory paths of helminths to the central nervous system and the relationship of helminths to virus invasion of it are discussed. In schistosomiasis, paragonimiasis and troglotremiasis of the brain, eggs are mainly responsible for granulomata but, on autopsy, adult flukes have occasionally been found. The chapter is illustrated by 46 photographs and a comprehensive bibliography is given.

883—MIGDALSKA-KASSUROWA, B. & OBODOWSKA-ZYSK, W., 1966. "Objawy neurologiczne u chorych na włośnicę." *Wiad. parazyt.*, **12** (1), 67–76. [English summary pp. 75–76.]

Half of 122 patients with trichinelliasis of different intensities of infection and of various ages showed neurological symptoms. These included headaches and vertigo in 58%, sleep disturbances in 17%, reflex disturbances in 34%, sensory disorders, mostly paresthesis, in 11·5% and other symptoms.

*3400—BARR, R., 1966. "Human trichinosis: report of four cases, with emphasis on central nervous system involvement, and a survey of 500 consecutive autopsies at the Ottawa Civic Hospital." *Can. med. Ass. J.*, **95** (18), 912–917.

3427—KENNEDY, F. B. & REGE, V. B., 1966. "Trichinosis." *Archs intern. Med.*, **117** (1), 108–112.

Case histories of trichinelliasis in a mother and her son in the U.S.A. are described. The mother exhibited central nervous system damage and both had enlarged livers. The mother was successfully treated with corticotropin at 40 I.U. intramuscularly, twice daily for 15 days. C.W.G.

1658—WOODRUFF, A. W., 1968. "Helminths as vehicles and synergists of microbial infections." *Trans. R. Soc. trop. Med. Hyg.*, **62** (3), 446–452.

The author reviews the literature concerning possible associations between helminth infections and bacterial, viral and protozoan pathogens. The evidence for such relationships may be summarized as follows: 13.6% of persons who had had paralytic poliomyelitis showed indications of *Toxocara* infections compared with 2.1% of controls, suggesting a causal relationship: swine influenza virus alone does not give rise to significant disease in pigs, but in combination with *Ascaris* infection causes a severe syndrome, resulting, in one instance, in the death of 56%; evidence for a similar relationship between Japanese B encephalitis virus and *Toxocara canis* was seen in horses, and experimentally in mice: experimental and circumstantial evidence indicated that *Trichinella spiralis* in mice can transmit the virus causing lymphocytic meningitis, and also that rats with *T. spiralis* infection are more susceptible to encephalomyocardial virus: a case history in which a woman died, apparently due to the dissemination of *Escherichia coli* by filariform *Strongyloides stercoralis* larvae, is described: a cat experimentally infected with *Toxocara cati* and *Toxoplasma gondii*, remained capable of transmitting toxoplasmosis for longer than would have been expected, probably indicating the survival of *T. gondii* in the eggs of *Toxocara cati*: a case history suggesting an association between *Necator americanus* infection and the cholera carrier state is described: evidence for the possible aggravation of cholera by *Ascaris* infection is reported. M.R.N.S.

3712—HALL, W. J. & McCABE, W. R., 1967. "Trichinosis; report of a small outbreak with observations of thiabendazole therapy." *Archs intern. Med.*, **119** (1), 65–68.

Four cases of trichinelliasis in the U.S.A. are described. Although 3 patients treated with thiabendazole (1·75 g. twice daily for 4 days, 4 g. per day for 4 days and 1·1 g. twice daily for 4 days) showed clinical improvement, further evaluation is needed. C.W.G.

2665—GOULD, S. E., 1970. "Clinical manifestations. A. Symptomatology." In: Gould, S. E. [Editor], "Trichinosis in man and animals." *Springfield, Ill.: Charles C. Thomas*, pp. 269–306. [En]

The symptoms of *Trichinella spiralis* infection in man and animals are reviewed. Opinions on the possibility that *Trichinella* produces a toxin are discussed and it is concluded that it is doubtful that any of the symptoms are produced by a true toxin. D.A.Cz.

2666—GOULD, S. E., 1970. "Clinical manifestations. B. Diagnosis." In: Gould, S. E. [Editor], "Trichinosis in man and animals." *Springfield, Ill.: Charles C. Thomas*, pp. 307–328. [En]

Clinical diagnosis of *Trichinella spiralis* infection in man and differentiation of the disease from other conditions which present similar symptoms are discussed. 6 illustrative cases are described. References cited in this paper and the one above are appended. D.A.Cz.

3293—GOULD, S. E., 1970. "A. Anatomic pathology." In: Gould, S. E. [Editor], "Trichinosis in man and animals." *Springfield, Ill.: Charles C. Thomas*, pp. 147–189. [En]

The lesions associated with *Trichinella spiralis* infection in man and animals are described. *Trichinella* as a carrier of virus infections is briefly discussed. It is concluded that the association of trichinelliasis with cancer is purely coincidental. A large number of references are cited. D.A.Cz.

3740—GOULD, S. E., 1970. "B. Clinical pathology: diagnostic laboratory procedures." In: Gould, S. E. [Editor], "Trichinosis in man and animals." *Springfield, Ill.: Charles C. Thomas*, pp. 190–221. [En]

The following laboratory procedures for the diagnosis of *Trichinella spiralis* infection in man and animals are discussed: haematological tests, serological and bacteriological tests, chemical tests, immunological tests, recovery of adults and larvae, demonstration of larvae in muscle, and recovery of larvae from fluids of the body. A large number of references is given. D.A.Cz.

ANNOTATED BIBLIOGRAPHIES

PREPARED BY THE
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The following bibliographies are obtainable from the Commonwealth Institute of Helminthology, The White House, 103 St. Peter's Street, St. Albans, Herts, England.

1 *Cysticercus ovis* and *Taenia ovis*.
59 references covering 1932—1969. £0.50 ($1.30)

2 *Taenia saginata* and *T. solium* in Lebanon, Turkey and Yugoslavia.
50 references covering 1932—1969. £0.50 ($1.30)

3 Helminthology in Iraq.
71 references covering 1932—1969. £0.70 ($1.80)

4 Humpsore (Stephanofilariasis) in domestic animals.
71 references covering 1932—1969. £0.70 ($1.80)

5 Skin lesions in domestic animals caused by *Elaeophora*, *Rhabditis* and *Parafilaria*.
55 references covering 1932—1969. £0.50 ($1.30)

Suggestions of topics suitable for future bibliographies will be welcomed.
Prices include postage by surface mail.